NOVEMBER/DECEMBER 2023

CEL21/FEL21 — EELCTROMAGNETISM AND AC CIRCUITS

Time : Three hours　　　　Maximum : 75 marks

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SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. What is meant by coefficient of coupling?

2. Write any two uses of eddy current.

3. Define mean value of alternating current.

4. Relate inductance and resistance.

5. What are tesla coils?

6. Write the frequency of oscillation.

7. Define star and delta connections

8. List the characteristics of shunt dynamos.

9. Define Faraday's law.

10. State Ampere's force law.

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Determine the mutual induction of a solenoid inductor.

Or

(b) Demonstrate the method of measurement of intense magnetic field using search coil.

12. (a) Elaborate the power factor of an AC circuit containing LCR.

Or

(b) Illustrate the method of finding EMF induced in a coil rotating in a uniform magnetic field.

13. (a) Evaluate decay of current in a circuit having C and R.

Or

(b) Interpret the condition for discharge to be oscillatory.

14. (a) Discuss in detail the production and distribution of three phase AC.

Or

(b) Illustrate the working principles of DC Motor.

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15. (a) Explain Amperes circuital law.

Or

(b) Derive Maxwell's Equations in integral and differential form.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Derive the expression for induced EMF and determination self and mutual induction by coupling method.

17. Explain Mean, RMS and peak values of alternating currents and EMF.

18. Summarize the growth of current in a charge having LCR.

19. Elaborate the working of AC dynamo.

20. Explain Gauss's law for electrostatics.
